

REMARKS

Claims 1, 12-18 and 20 are pending in this application. In view of the following remarks, Applicants believe that the asserted rejections should be withdrawn and that all of the claims are in condition for allowance.

35 U.S.C. § 102 Rejection

Claim 1 stands rejected under 35 U.S.C. § 102(e) as being anticipated by Willson et al. The Examiner asserts that one monomer in Figure 4 meets the instant structural limitations for the instantly elected and claimed monomer.

Applicants respectfully submit that, while Formula A recited in claim 1 reads on the structures shown in Fig. 4 of Willson et al., such structures are presented as imaging polymers and not as dissolution inhibitors (or as Applicants refer to it, as a dissolution rate modifier) as recited in claim 1. Furthermore, Willson et al. disclose structures for a number of materials referred to as dissolution inhibitors and actually comment on the “considerable inhibition effect” of the molecule shown in Fig. 5 of their paper. However, none of the structures of claim 1 reads on the molecule disclosed in Fig. 5 of Willson et al, or of the alternate structure presented in Fig. 7. Therefore, for at least this reason, Willson et al. do not teach or suggest the “dissolution rate modifier” recited in claim 1.

Additionally, because the polymers produced from the monomer structures disclosed in Fig. 4 of Willson et al. are imaging polymers, they cannot be deemed to anticipate the instant oligomers of claim 1 having a $MW \leq 3000$. While Willson et al. do not provide any molecular weight data, a reference previously cited by the Applicants, namely, Tran et al. (Cite No. AT in Applicants’ IDS), which also is reference 4 in the Willson et al. article, states that the polymers obtained all were in excess of a $MW = 20,000$ using a Ni catalyst (at page 6544 under heading Copolymer A), and that only by using ≥ 5 mol% of a Pd catalyst was the molecular weight less than 9000 (at page 6546, first paragraph). The Tran et al. reference further states that such a method was “not satisfying” because of catalyst cost and metal removal issues caused by such a high concentration of catalyst. Indeed, the Tran et al. article, as well as the Willson et al. article, never discloses oligomers having a $MW \leq 3000$ and never discloses nor suggests that monomers such as those gleaned from the polymer structure of Fig. 4 in the Willson et al. article

could even function as a dissolution inhibitor. Therefore, for this additional reason, Willson et al. do not anticipate the oligomers recited in claim 1 of the instant application.

35 U.S.C. § 103 Rejections

Claims 12, 13, 15-18 and 20 stand rejected under 35 U.S.C. § 103(a) as being obvious over Willson et al. in view of Feiring et al. The Examiner asserts that Willson et al. disclose a monomer for use in preparing a copolymer or oligomers, however, the reference is silent with respect to the preferred method of preparing the copolymer or oligomer. The Examiner further asserts that Feiring et al. disclose similar monomers and a process to prepare oligomers employing a method comprising adding to the monomer(s) compounds such as propylene and isobutylene, a Pd catalyst, in a solvent such as chlorobenzene, while heated. The Examiner, therefore, asserts that it would be obvious to prepare a copolymer or oligomer of the monomer of Willson et al. and to choose the method of Feiring et al.

As mentioned above, Willson et al. do not disclose oligomers having a repeat unit derived from a monomer as recited in claim 1. Rather, Willson et al. disclose an imaging polymer that coincidentally has a repeat unit derived from a structure in accordance with Formula A. However, the polymers disclosed by Willson et al. have none of the other limitations recited in claim 1. Furthermore, Willson et al. do not disclose nor suggest that such a monomer could be useful as a dissolution inhibitor or as a portion of such a material, nor do Willson et al. disclose or suggest that such a monomer could be used to form oligomers. As to this last point, as mentioned above, Willson et al. explicitly state, in agreement with the Tran et al. article, that it is difficult to obtain polymers from such a monomer having a molecular weight less than 20,000 and, when such difficult to obtain polymers are made, both Tran et al. and Willson et al. disclose that the polymers are made by an unsatisfactory method and only with a molecular weight less than 9,000. Thus, Applicants submit that Willson et al. provides no motivation for one skilled in the art, either by an explicit statement or an implied concept, to make oligomers using monomers such as the ones shown in the imaging polymer of Fig. 4, or that, even if it were possible to make such oligomers, that they would be useful as dissolution inhibitors.

With respect to Feiring et al., Applicants point out that there is no disclosure whatsoever of making any oligomers. Rather, Feiring et al. disclose a number of imaging

polymers and methods of making the same where the lowest reported molecular weight is 8400 (Example 21). Because the instant application is directed to oligomers (a term not even mentioned in Feiring et al.) having a molecular weight of less than or equal to 3000, Feiring et al. do not provide a teaching that would motivate one skilled in the art to combine their teaching in any manner with the teaching of Willson et al. in order to prepare the claimed oligomers of the instant application, nor do Feiring et al. provide any motivation to prepare oligomers or to prepare dissolution inhibitors. Therefore, because there is not basis or motivation to combine the teachings of Willson et al. and Feiring et al., a *prima facie* case of obviousness based on these teachings cannot be made.

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being obvious over Willson et al. in view of Feiring et al. and Araki et al. The Examiner asserts that Willson et al. and Feiring et al. employ radical initiators, but fail to specifically teach the radical initiator as claimed. The Examiner asserts that Araki et al. disclose a method similar to that of Feiring et al., but teach that suitable radical initiators include isobutyronitriles.

Applicants submit that Araki et al. disclose only imaging polymers and not oligomers. Indeed, Araki et al. explicitly state that “when the molecular weight is too low, heat resistance and mechanical properties of the obtained polymer coating film tend to become insufficient, and a too high molecular weight tends to be disadvantageous from the viewpoint of processibility” (see column 19, line 35 ff). Thus, Araki et al. disclose that materials having a molecular weight of 3000 or less will not form a sufficient structure to act as an imaging layer for the compositions produced to form chemically amplified photoresists.

Moreover, it should be noted that even though Araki et al. mention a molecular weight range of 1,000 to 1,000,000, such a range is a number average molecular weight, referred to as “MN,” and not the weight average molecular weight, i.e., “MW,” presented in the instant application. That is to say, for any given polymer, MW and MN can be quite different and such difference generally is represented by the ratio MW/MN, known as the polydispersity index, which typically is 2 or more. Thus, Applicants point out that when comparing the value of MW recited in the instant claims to the value of MN disclosed by Araki et al., it is necessary to multiply the values of Araki et al. by a factor of at least 2 and perhaps as much as 3 or 4 in order to be certain that the comparison of values is accurate. Furthermore, the lowest molecular

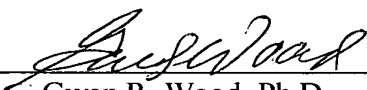
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weight material produced by Araki et al. is disclosed in Example 40, where a polymer of norbornene, tetrafluoroethylene and fluorine-containing allyl ether is described as having a MN of 3900. Thus, this lowest disclosed number must be multiplied by at least 2 to obtain a value of at least 7800 in order to compare it to the $MW \leq 3000$ recited in the instant application.

Therefore, because the Araki et al. patent is directed to chemically amplified photoresists and base resins or polymers used in forming such photoresist compositions, and further because Araki et al. do not disclose or suggest forming oligomers for any purpose, yet alone for use as dissolution inhibitors, there is no motivation to one skilled in the art, either explicitly or inherently, to combine the teaching of Araki et al. with that of either or both of Willson et al. and Feiring et al., and thus a *prima facie* case of obviousness cannot be made.

In view of the foregoing remarks, it is respectfully submitted that all of the pending claims in the present application are distinguishable from the cited prior art. Accordingly, reconsideration and withdrawal of the rejection and an early Notice of Allowance are respectfully requested.

Respectfully submitted,

By 
Gwen R. Wood, Ph.D.
Registration No. 51,027
Attorney for Applicants
700 Koppers Building
436 Seventh Avenue
Pittsburgh, Pennsylvania 15219
Telephone: 412-471-8815
Facsimile: 412-471-4094
E-mail: webblaw@webblaw.com